

REMARKSAmendments to Specification

The specification has been amended to correct typographical errors and to make the specification consistent with the drawings. Applicant respectfully submits that no new matter has been introduced and that the specification is currently in condition for allowance.

Drawings – Objections

The drawings stand objected to under 37 CFR 1.83(a). Examiner asserts that the buried layers laid out in a grid formation, and the biasing of the regions, layers and substrates must be shown or the feature(s) canceled from the claim(s).

Applicant has submitted replacement FIGS. 1 and 3 and new FIG. 4 showing the buried layers laid out in a grid formation, and the biasing of the regions, layers and substrates as requested by Examiner

The drawings stand objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters 112, 212, 114, 214, and 116 have been incorrectly designated.

Applicant has submitted replacement FIGS. 1 and 3 with reference characters 112, 212, 114, 214, and 116 correctly designated.

Applicant respectfully submits that the drawings are currently in condition for allowance. Reconsideration and withdrawal of the objection is respectfully requested.

Claim Objections

Claims 4, 13, 22, and 31 stand objected to under 37 CFR 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim. Although Examiner identifies Claim 11 as being objected to, Applicant believes that this identification was a typo and that Examiner intended to cite Claim 13.

The dependencies of Claims 4, 13, 22, and 31 have been amended in order to overcome Examiner's objection.

Applicant respectfully submits that amended Claims 4, 13, 22, and 31 further limit the subject matter of Claims 3, 12, 21, and 30 from which they depend respectively. Applicant respectfully submits that Claims 4, 13, 22, and 31 are currently in condition for allowance.

Reconsideration and withdrawal of the objection is respectfully requested.

Claim Rejections – 35 U.S.C. §103

Claims 1-4 and 10-13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chan et al. (US 6,169,693 B1) in view of Ohsawa (US 2004/0026749 A1). Applicant respectfully disagrees with Examiner's contentions.

For a §103 obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. MPEP 2143.

Claim 1 recites a transistor for an integrated circuit comprising “a p-type substrate; an n-type region disposed over said p-type substrate; a p-type region disposed over said n-type region; ... said substrate, said n-type region and said p-type region each biased such that said p-type region is fully depleted.”

Neither Chan nor Ohsawa disclose a substrate, a n-type region and a p-type region each biased such that the p-type region is fully depleted, as recited in Claim 1. Examiner admits that Chan fails to teach a fully depleted p-type region. However, Examiner asserts that Ohsawa teaches a fully depleted p-type region and that it would have been obvious to one having ordinary skill in the art to modify the transistor memory structure as taught by Chan with the transistor memory structure having a fully depleted p-type region as taught by Ohsawa to secure good characteristics of data holding.

Although Ohsawa teaches a fully depleted p-type silicon layer, it fails to disclose the substrate, the n-type region and the p-type region each being biased such that the p-

type silicon layer is fully depleted, as recited in Claim 1. Ohsawa describes how the p-type silicon layer achieves full depletion, stating, “the p-type silicon layer 13 has an acceptor concentration N_A and a thickness such that it is fully depleted” (Page 4, Paragraph [0083]). There is no mention of the substrate, the n-type region and the p-type region each being biased in such a way that the p-type silicon layer is fully depleted. Rather, Ohsawa merely teaches that full depletion can be achieved by adjusting only the acceptor concentration and thickness of the p-type silicon layer.

Although Chan discloses a substrate, an n-type region and a p-type region each being biased, it fails to disclose or even suggest that the substrate, n-type region and p-type region should be biased such that the p-type region is fully depleted.

Since neither Chan nor Ohsawa disclose a substrate, a n-type region and a p-type region each biased such that the p-type region is fully depleted, they cannot disclose all the elements of Claim 1 in combination.

Additionally, Ohsawa teaches that full depletion can be achieved by means unrelated to biasing the substrate, n-type region and p-type region. Therefore, there is no suggestion or incentive in either Chan or Ohsawa that would motivate one skilled in the art to modify the prior art references in order to arrive at the present invention as recited in Claim 1.

Applicant respectfully submits that Examiner has failed to establish a prima facie case for obviousness and that Claim 1 is patentable over Chan in view of Ohsawa.

Applicant respectfully submits that Claim 1 is currently in condition for allowance.

Reconsideration and withdrawal of the rejection is respectfully requested.

Since Claims 2-4 depend from Claim 1, Applicant respectfully submits that Claims 2-4 are also patentable as they contain the same limitations as their parent claim.

Reconsideration and withdrawal of this rejection is respectfully requested.

The same arguments made above with respect to the patentability of Claim 1 are applicable to the patentability of Claim 10 as well. Therefore, Applicant respectfully submits that Claim 10 is currently in condition for allowance.

Reconsideration and withdrawal of this rejection is respectfully requested.

Since Claims 11-13 depend from Claim 10, Applicant respectfully submits that Claims 11-13 are also patentable as they contain the same limitations as their parent claim.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 5, 7, 14, and 16 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chan and Ohsawa, and further in view of Chi et al. (US 6,060,742).

Since Claims 5 and 7 depend from Claim 1, Applicant respectfully submits that Claims 5 and 7 are also patentable as they contain the same limitations as their parent claim.

Since Claims 14 and 16 depend from Claim 10, Applicant respectfully submits that Claims 14 and 16 are also patentable as they contain the same limitations as their parent claim.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 6 and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chan, Ohsawa and Chi, and further in view of Shinohara et al. (US 2004/0000681 A1).

Since Claims 6 and 15 depend from Claims 1 and 10 respectively, Applicant respectfully submits that Claims 6 and 15 are also patentable as they contain the same limitations as their respective parent claims.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 19-22 and 28-31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lee (US 6,329,246 B1) in view of Ohsawa.

Claim 19 recites a transistor for an integrated circuit comprising “an n-type substrate; a p-type region disposed over said n-type substrate; an n-type region disposed over said p-type region; ... said substrate, said p-type region and said n-type region each biased such that said n-type region is fully depleted.”

Neither Lee nor Ohsawa disclose a substrate, a p-type region and an n-type region each biased such that the n-type region is fully depleted, as recited in Claim 19. Examiner admits that Lee fails to teach a fully depleted n-type region. However, Examiner asserts

that Ohsawa teaches a fully depleted region and that it would have been obvious to one having ordinary skill in the art to modify the MOS transistor structure as taught by Lee with the MOS transistor structure having a fully depleted region as taught by Ohsawa to suppress leak current in a scaledown.

Although Ohsawa teaches a fully depleted p-type silicon layer, it fails to disclose the substrate, the p-type region and the n-type region each being biased such that the n-type region is fully depleted, as recited in Claim 19. Ohsawa describes how the p-type silicon layer achieves full depletion, stating, “the p-type silicon layer 13 has an acceptor concentration N_A and a thickness such that it is fully depleted” (Page 4, Paragraph [0083]). There is no mention of the substrate, the p-type region and the n-type region each being biased in such a way that the n-type region is fully depleted. Rather, Ohsawa merely teaches that full depletion can be achieved by adjusting only the acceptor concentration and thickness of the p-type silicon layer.

Although Lee discloses a substrate, a p-type region and an n-type region each being biased, it fails to disclose or even suggest that the substrate, p-type region and n-type region should be biased such that the n-type region is fully depleted.

Since neither Lee nor Ohsawa disclose a substrate, a p-type region and an n-type region each biased such that the n-type region is fully depleted, they cannot disclose all the elements of Claim 19 in combination.

Additionally, Ohsawa teaches that full depletion can be achieved by means unrelated to biasing the substrate, p-type region and n-type region. Therefore, there is no

suggestion or incentive in either Lee or Ohsawa that would motivate one skilled in the art to modify the prior art references in order to arrive at the present invention as recited in Claim 19.

Applicant respectfully submits that Examiner has failed to establish a prima facie case for obviousness and that Claim 19 is patentable over Lee in view of Ohsawa.

Applicant respectfully submits that Claim 19 is currently in condition for allowance.

Reconsideration and withdrawal of the rejection is respectfully requested.

Since Claims 20-22 depend from Claim 19, Applicant respectfully submits that Claims 20-22 are also patentable as they contain the same limitations as their parent claim.

Reconsideration and withdrawal of this rejection is respectfully requested.

The same arguments made above with respect to the patentability of Claim 19 are applicable to the patentability of Claim 28 as well. Therefore, Applicant respectfully submits that Claim 28 is currently in condition for allowance.

Reconsideration and withdrawal of this rejection is respectfully requested.

Since Claims 29-31 depend from Claim 28, Applicant respectfully submits that Claims 29-31 are also patentable as they contain the same limitations as their parent claim.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 23 and 32 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lee and Ohsawa, and further in view of Wang (US 2004/0065922 A1).

Since Claims 23 and 32 depend from Claims 19 and 25 respectively, Applicant respectfully submits that Claims 23 and 32 are also patentable as they contain the same limitations as their respective parent claims.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 24 and 33 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lee, Ohsawa, and Wang, and further in view of Shinohara.

Since Claims 24 and 33 depend from Claims 19 and 25 respectively, Applicant respectfully submits that Claims 24 and 33 are also patentable as they contain the same limitations as their respective parent claims.

Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 25 and 34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Lee and Ohsawa, and further in view of Chi.

Since Claims 25 and 34 depend from Claims 19 and 25 respectively, Applicant respectfully submits that Claims 25 and 34 are also patentable as they contain the same limitations as their respective parent claims.

Reconsideration and withdrawal of this rejection is respectfully requested.

If the Examiner has any questions regarding this application or this response, the Examiner is requested to telephone the undersigned at 775-586-9500.

Respectfully submitted,
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